

Trinity County Strategic Plan for the Control of Noxious and Invasive Weeds

Trinity County Weed Management Cooperative (TCWMC)

I. INTRODUCTION AND EXECUTIVE SUMMARY

Mission Statement

The Trinity County Weed Management Cooperative (TCWMC) will cooperate and coordinate activities necessary for the prevention and control of noxious and invasive weeds in Trinity County. The emphasis of these activities shall be focused on the prevention of noxious weeds and their expansion through education and control.

The Problem

A proliferation of invasive weeds is overrunning Trinity County. These non-native plants, such as yellow starthistle and Himalayan blackberry, fall under the classification of noxious and invasive weeds. Agricultural land in Trinity County is limited due to the topography. Noxious weeds limit the productivity of these lands by competing with browse species and planted crops. In some cases, noxious weeds are poisonous to wildlife and domestic animals. In addition to being an economic threat, noxious and invasive weeds are robbing Trinity County of its rich biological diversity. Trinity County is located in the middle of the Klamath-Siskiyou Ecoregion. More species of native, vascular plants are found in this region than are found in the entire northeastern United States and adjacent Canada. Only one other region of roughly the equivalent size in North America – the southern Appalachians – has a flora that rivals the Klamath-Siskiyou Ecoregion in terms of diversity.

The Solution

Goals of this Strategic Plan for the coordinated management of noxious weeds are:

- 1) To educate landowners and the general public concerning the importance of the exclusion of new weed species from Trinity County and the control of noxious weeds already found within the county.
- 2) To identify and map key weed infestations.
- 3) To cooperatively plan and fund projects to control and/or eradicate specific weed infestations and/or species in the county.

The Plan will address four major elements critical to building a strong and successful regional noxious weed management program

- 1) Education, Awareness and Outreach
- 2) Prevention: Exclusion and Early Detection
- 3) Survey, Inventory, and Mapping
- 4) Eradication, Control, and Project Monitoring

The Strategic Plan outlines actions designed to stop the spread of noxious weeds with an emphasis on the application of Integrated Weed Management practices. To accomplish this, the supporters and cooperators will seek to meld resources, priorities and strategies into a unified action. The plan will be revised annually to reflect program successes and new challenges.

II. PROGRAM DESCRIPTION

General Overview

The noxious weed management program in Trinity County is a cooperative effort between the State, Trinity County, federal agencies, agricultural interests, other groups, and individuals. The program is directed at controlling, suppressing and eradicating non-native, invasive, noxious weeds and is a cooperative effort of all the participating organizations. Educating the public to assist in the fight against noxious weeds is an important component. The different organizations and individuals supply money, personnel, and equipment, and cooperate in procuring grants and aid. Whether a certain weed is suppressed, eradicated, or otherwise managed is usually determined by; 1) State rating (mandate), 2) pest potential in Trinity County and neighboring counties, 3) size of infestation in the county, 4) availability of control methods and/or 5) whether there is interest from agricultural organizations or governmental agencies.

Prioritization

Trinity County contains numerous non-native naturalized plants. Not all of these “weeds” are equal in their abundance, destructiveness or rapidity of spread. Clearly there is a need to prioritize weeds to focus the attention of the TCWMC. The prioritization was carried out by all members of the Cooperative, which considered the California Department of Food and Agriculture’s Noxious Weed List as well the California Exotic Pest Plant Council’s List of Ecological Pest Plants. The following list should be viewed as “top priority” species for the county as a whole, but are not necessarily equally problematic in every part of the county. Weed control activities are not limited to species on this list.

Trinity County Priority Species

(In alphabetical order)

Dalmatian toadflax	(<i>Linaria dalmatica</i>)
Diffuse knapweed	(<i>Centaurea diffusa</i>)
Dyer’s woad	(<i>Isatis tinctoria</i>)
Himalayan blackberry	(<i>Rubus discolor</i>)
Hoary Cress/whitetop	<i>Cardaria chalapensis</i>
Klamathweed	(<i>Hypericum perforatum</i>)
Scotch broom	(<i>Cytisus scoparius</i>)
Spotted knapweed	(<i>Centaurea maculosa</i>)
Tree-of-Heaven	(<i>Ailanthus altissima</i>)
Yellow starthistle	(<i>Centaurea solstitialis</i>)

III. PROGRAM ELEMENTS

Education, Awareness, and Outreach

In general, citizens and landowners in our community underestimate how noxious and invasive weeds negatively impact the environment, economy, and natural resources. Weed management still tends to be viewed as an issue exclusive to more traditional row crop agriculture and front lawns, rather than an integral part of natural resource management activities, such as: outdoor recreation, fire, wildlife, wilderness, grazing, timber, maintenance of transportation corridors, and protection of biodiversity. Greater awareness and understanding from California citizens and landowners will lead to increased actions from local, state, and national officials in making noxious and invasive species a priority.

Education is one of our best tools in preventing the further spread of noxious and invasive species, locating previously unknown and remote weed populations, and in rallying support in controlling and

eradicating infested sites. Raising public awareness and understanding requires a well-planned, well-funded, and long-term program.

Education, Awareness and Outreach Actions: The TCWMC will establish an education and outreach committee. In addition to County specific efforts, the committee will work closely with adjoining WMAs to more effectively educate citizens and landowners across our regional county boundaries. The committee will tackle several projects:

- **Noxious Weeds to Watch in Trinity County.** Based on the TCWMC list of top noxious and invasive species, the committee will write the text and compile quality photos for a brochure. The brochure will be designed by members of the cooperative who will coordinate printing and dissemination to residents of Trinity County. Brochures will be available to the public at any informational centers around the county and will include contact numbers for members of the Weed Co-op. The brochure will be used to develop a poster display for the yearly Trinity County Fair and other events around the state and county.
- **Speakers Bureau.** The committee will establish a list of local and regional experts available to speak about invasive and noxious weeds at civic group luncheons, visit local classrooms, and like gatherings. Speakers Bureau will be promoted at workshops and events and on our website and they will give weed identification trainings to local private and public agencies.
- **TCWMC website.** One member of our Committee will be designated to continually provide information to Calif. Dept. of Food and Agriculture to keep our TCWMC website current. Information about upcoming meetings, workshops, and events will be posted.
- **Starthistle Bio-control Workshops.** Conduct yearly workshops that teach landowners to identify and collect starthistle bio-control insects.
- **Work with ranchers and rural landowners** to promote sustainable land use practices as related to weeds and non-native plant species

Prevention: Exclusion and Early Detection

Preventing a pest from becoming established in an area, avoids all associated losses and costs for control of that pest, into the indefinite future. Prevention covers all aspects of keeping a non-native noxious or invasive species from becoming established in a new territory. The components of prevention commonly include exclusion, detection, and eradication. In addition, public outreach affects all components of prevention.

Exclusion includes all activities to keep non-native noxious and invasive species from crossing the border of a region. At the national or state level, it often depends on border inspections. At the county level, it depends heavily on appeals to the public to use caution in activities that can intentionally or unintentionally move species. To a lesser extent, it may depend on regulatory activities such as nursery inspections, weed-free-forage programs, and other weed abatement activities.

Detection and eradication of early infestations deal with weeds that have bypassed exclusion. Detection includes all activities to find new infestations of weeds in a region. Eradication includes all activities to completely remove an infestation. Weed populations increase rapidly with time when they are in a new, hospitable environment, and costs of control increase directly with the size of the population. Currently, such a system can only be applied to the weeds that pose the greatest economic and environmental threat due to the numerous resources required to conduct an eradication program. Prevention techniques can be more effective and less costly in the long run because they aim to prevent populations from getting established in a region.

Prevention Action:

- Encourage the use of certified weed-free straw in restoration and erosion-control activities on public and private lands.
- Encourage actions that will minimize soil disturbance to minimize creation of habitat for invasive weeds

Exclusion Action:

- Request that Caltrans and Trinity County Department of Transportation institute preventative measures to reduce the likelihood of introducing or spreading noxious weeds. Measures could include cleaning of off-road equipment before moving between job sites, use of noxious weed-free mulch and straw in erosion control, avoiding plants on the CDFA and CalEPPC lists in re-vegetation projects, and local use only of excavation spoils.
- Request that California Department of Forest and Fire Protection and USFS institute preventative measures to reduce the likelihood of introducing or spreading noxious weeds. Measures may include cleaning off-road equipment that they implement policies on fire, road construction, restoration, and logging activities to minimize the spread of noxious weeds. Major points may include requiring that heavy machinery and equipment used for fire, logging, and road construction and maintenance projects be cleaned with water or air before leaving for the next work site, use of noxious weed-free mulch and straw in erosion control, avoiding plants on the CDFA and CalEPPC lists in re-vegetation projects, and using native seed and plants in revegetation and restoration projects.
- Work with BLM and USFS to develop use of weed-free hay for pack-stock and weed-free straw for restoration and erosion control. Encourage the use of weed-free materials on public lands.
- Provide lists of plants on CDFA and CalEPPC lists to nurseries and landscaping companies. Create a poster listing plants on CDFA and CalEPPC lists. Request nurseries and landscaping companies to display poster in public view.
- Development of Native Seeding Guidelines by USFS. The Shasta-Trinity National forest is currently developing native seeding guidelines for fire restoration, road decommissioning, erosion control, and mine reclamation.

Detection Action:

- Weed recognition reference for field personnel. The weed co-op will develop a list of noxious and invasive weeds, which the members feel should be watched in the county and the region. Based on this list, a sub-committee will write the text and compile quality photos for a handbook. We will use the Lassen County weed booklet as a template. Distribute to local land management professionals.

Survey, Inventory, and Mapping

A strategic and long-term approach to noxious and invasive weed control is based on a solid knowledge of the countywide distribution of the weeds. The choice of control objective (i.e. eradication, suppression, or containment) and control technique will depend on how the weed is spread over the landscape. Because funding for cooperative weed control is very tight, resources must be allocated in a highly strategic fashion. Infestations which are pioneers in an otherwise uninfested area should be prioritized for aggressive eradication, whereas cooperative control projects in heavily infested areas need to have clear long-term justifications.

The weed mapping strategy itself should be tied to the average infestation level of the region and the management goals for the populations in the region. Where weeds are very heavy it is not necessary or

feasible to do fine grained, intensive mapping. Where the weeds are in small, localized populations more accurate locality information is needed for eradication efforts. Mapping weeds intensively and accurately at the edge of a containment zone is also critical to succeeding at stopping spread.

Survey, Inventory and Mapping Actions:

- Summer “weed warriors” to map weeds across the county. Obtain grant funding for seasonal weed mapping technicians. Provide for GPS equipment in the grant.
- Members of the co-op will attend CDFA’s Regional Weed Mapping trainings.
- Provide county weed map sets to all field employees and members of the TCWMC members for their use in identifying NEW unknown populations of noxious and invasive weeds.
- Using CDFA’s template, create a Trinity County Weed Mapping Handbook.
- Inventory and map invasive weeds within the Trinity Alps Wilderness.

Eradication, Control, and Project Monitoring

Noxious weeds pose a threat to Trinity county crops, rangelands, irrigation systems, roadsides, wildlands, recreation areas and homes. Weed control is best achieved using a long-term, integrated approach. Weed management is an effort to eradicate, suppress, or contain a weed infestation from a particular area. Integrated weed management (IWM) is a systems approach to weed control. IWM involves developing a planned, strategic program that will take several factors into consideration to maximize weed control. These considerations include the control objectives for the land (eradication, suppression, or containment), the effectiveness of the control technique on the target species, biological and environmental factors, land use, economics, policy and legal restrictions, practicality, and the extent and nature of the weed. When implementing weed control techniques, this approach considers using all available control methods known for a weed species. These methods include: chemical, physical or mechanical methods, cultural methods, and general land management practices. Biological control may also be used for containment and control objectives but not for eradication.

One important consideration that must be part of any weed control project is the control objective. These objectives can be described by the following terms: eradication, suppression, and containment. Considerable overlap may occur among all three objectives within any one management/weed control plan.

- 1) Eradication is a type of control objective aimed at eliminating all individuals of a particular species within a specified area (defined in Prevention section above). This objective is the goal when the weed is of considerable economic and environmental concern (noxious) and the weed's population size is small. Eradication is also desirable for limited weed populations which occur in areas of highly intact native biodiversity with high values, such as wilderness, Special Interest Areas, or designated Botanical Areas.
- 2) Suppression is a weed management objective aimed at reducing the current infestation density but not necessarily reducing the total area or boundary of the infestation. This applies to many widely distributed, high-density weeds where eradication is not feasible.
- 3) Containment is a weed management objective aimed to prevent infestation expansion and spread and may be conducted with or without any attempt to reduce infestation density. This objective is an alternative to eradication or suppression. Containment focuses on halting spread until suppression or eradication can be implemented.

In order to ensure the success of a weed control project, specific project goals must be made. These project goals should be made for both the short and long-term as persistent weeds take several years to achieve the desired level of control. For example, project goals may be made for 1 year, 5 year, and 10

year increments. Management plans should be revised annually and modifications made as needed. Weed population maps should be regularly updated to develop weed control priorities, measure baseline vegetation data, monitor bio-control trends, and measure project success.

Monitoring and evaluation indicate the degree of success and impacts to target and non-target vegetation resulting from weed management activities. Other than personal observation and professional judgment, there is seldom any baseline information available on which to make evaluations. Since success will depend on achieving the objectives in strategic plans and integrated weed management plans, it is imperative that monitoring data be collected to assess changes and trends. Members will collect baseline data prior to treatment; develop specific evaluation methods prior to project onset; collect reduction in cover data to evaluate control success; evaluate the effectiveness of treatment and management measures; take photos of each project site; and compile and present data annually to TCWMC.

Eradication Actions:

Dyer's Woad (*Isatis tinctoria*) Removal at Carrville Ponds

- Dyer's woad originated in the Scott Valley of Siskiyou County and moved over the top of Scott Mountain into Trinity County about 20 years ago. It is currently found along Hwy. 3 North, Hwy. 299 west of Weaverville, primarily along roadways, disturbed openings and fields and stream terraces of the Trinity River. Several populations of Shasta chaenactis (*Chaenactis suffrutescens*), a Sensitive plant species, are threatened by establishment of this weed. Both species occupy similar habitat.
- Reproduction is by abundant seeds per plant or vegetatively if mechanical disturbance occurs. A close relative of the Eurasian rust fungus *Puccinia thlaspeos* has been used successfully to control dyer's woad in North America, but has not yet been introduced in Trinity County. Mechanical control can best be attained through hand pulling in areas of small infestations either in the rosette stage of the first year of growth or during flowering when the flowers are conspicuous. Whole plants must be pulled as mowing or removal of parts will stimulate regeneration from roots.
- Eradicate dyer's woad from known sensitive plant populations at Carrville Bottoms at the north end of Trinity Lake. Two successive years of repulling would be required for new plants from the seed bank. Funding for annual monitoring and treatment will be sought in future years.
- Days of treatment would be documented, including an assessment of number of plants pulled. Annual monitoring would document the effectiveness of treatment by recording the increase/decrease in population size.

Control Actions:

- 1) Scotch Broom local control in Trinity County with an emphasis on roadside populations and private landowner outreach. Lead Role: Trinity County RCD (Landowners: Private, BLM, County Roads, CALTRANS, PG&E, US Forest Service).
- Currently, there are two extensive populations of Scotch broom (*Cytisus scoparius*) in Trinity County. One is centered on Junction City along Highway 299, Red Hill Road, and Dutch Creek Road. The other is along Trinity Dam Boulevard in Lewiston. Scotch broom is slowly creeping from these infestations and others outside of Trinity County along the transportation corridors. The Trinity County RCD will 1.) map populations of Scotch broom in the county focusing on areas adjacent to roads, 2.) seek funding to eradicate small satellite populations found along transportation corridors with a special focus on riparian areas, and 3.) seek

funding to contain and suppress the large populations around Junction City and along Trinity Dam Boulevard.

- TCRC, in cooperation with TCWMC, will seek grant funding for this comprehensive control program and coordinate with private landowners and cooperative members depending on property ownership of mapped infestations. Success of control efforts will be monitored at an appropriate frequency.

2) Diffuse Knapweed Detection and Control on private and public lands. (Landowners: Private, USFS; collaborators: Trinity County RCD and Shasta-Trinity National Forest).

- Spotted and diffuse knapweed populations are somewhat restricted in Trinity County, with the majority of occupation on National Forest lands. There have been no inventory efforts to define the total geographic occupation of these species, but populations of the species are known from the South Fork Mountain area, northern Mendocino National Forest, Covington Mill, and Wildwood. A population of diffuse knapweed on the top of the South Fork Mountain is considered to be the largest in the State of California, and is thought to occupy approximately 800 acres of public and private lands. It is spreading into Humboldt County and has been identified on Eightmile Ridge, west of South Fork Mountain. Spotted knapweed is known from the Yolla Bolla Ranger District in the southern end of Trinity County (near Hackney Spring) and at Covington Mill. Both are California State "A" rated weeds.
- Several insects have been used successfully for biological control of knapweed, and have been introduced to Trinity County populations. Knapweed does not normally reproduce vegetatively, although some regrowth can occur within a single year with mowing. Hand grubbing will work successfully on satellite populations that are removed while soil is moist enough to remove most or all of the plant. Because of the large extent of the South Fork Mountain population of diffuse knapweed, biological control is imperative as a means of control for the future, this will require environmental analysis for use on Federal lands.
- Survey and map the boundaries of existing knapweed populations. Identify landowners with inclusions of private land and work together to develop a treatment strategy agreeable to all parties. Eradicate satellite populations of diffuse and spotted knapweed.
- Mapping will be done with a ground survey and GPS unit, with geographic information entered into a GIS database for analysis.

3) Distribution of Hairy weevils and other biocontrol insects on public and private lands (Landowners: Private, USFS; collaborators: Trinity County RC&D, Trinity County Department of Agriculture (TCDA), and Shasta-Trinity National Forest).

Collect hairy weevils and other insects from known populations and release to target weed infestations. Three workshops, which taught the identification and collection of hairy weevils for star thistle biological control, were held in 2000. All participating landowners received collections to release on their properties. 53 private collections of hairy weevils (200 individual weevils per collection) were collected and distributed by the RC&D and the TCDA. Between 5 and 15 populations of yellow starthistle and bull-thistle throughout the County received biocontrol insects in 1998-2000.

- Schedule a minimum of one workshop per year to teach weevil identification and collection. Collect weevils for distribution on appropriate starthistle populations on private lands. Workshops scheduling will be dependent on available personnel and funding.
- Emphasize biological control treatments on Federal lands within the Trinity County upon completion and approval of environmental analysis.

Funding and Finance

While improving, funding for all phases of noxious and invasive weed management is chronically inadequate. The current rate of spread of major weeds and the introduction of new species is far outstripping our ability to contain them. The problem is most acute in counties with sparse populations and small private land bases resulting in a low tax base. Furthermore, federal funding is far from sufficient to deal with the extent and scope of the problem on the nearly 1.6 million acres of federal land in Trinity County. Beyond state appropriated funds, a large pool of available grant monies exists. For example grant funds are not typically targeted specifically for noxious and invasive weed projects, but can be tapped into by encompassing weed control into larger watershed and restoration level projects.

Another source of funding comes from Weed Co-op members. Many partners can contribute in-kind support in the form of educational materials, computer and printing capabilities, and a variety of unique expertise. While large-scale projects require a considerable funding base, TCWMC can achieve many educational, inventory and mapping, and limited control objectives by drawing on resources within the TCWMC group.

Funding and Finance Actions: The TCWMC will establish a grant funding committee. The committee will be responsible for:

- **Grants.** Beyond AB1168 and SB1740 funds, the committee will submit a proposal for at least one grant each year. (e.g. NFWF Pulling Together, WOW, EQIP, in cooperation with other WMAs in our region, appropriate local community funds and foundation monies). Each grant will target one project designated as a priority by the TCWMC at large.
- **Assessment of In-kind Resources.** To continually recognize resources available within the TCWMC, a survey of TCWMC members will be conducted, as new projects arise, as to what in-kind contributions could be made to see project to completion.

IV. GLOSSARY AND APPENDICES

Appendix A - Roles and responsibilities of TCWMC partners.

A. Trinity County Department of Agriculture

1. Release of biological control agents and manage of their distribution throughout the county.
2. Work with private landowners to address noxious weed infestations on their properties.
3. Identify all noxious weed infestations on county property.
4. Educate the public about noxious weeds, their identification and methods of control and prevention.
5. Work with city, county, state and federal land managers to address noxious weed infestations on the property they manage.
6. Provide information about safe use of pesticides.
7. Map noxious weed infestations utilizing GIS.
8. The Administrator for all Trinity County Government agencies shall be _____, Trinity County Agricultural Commissioner.

B. California Department of Transportation, District 2

1. Provide no fee encroachment permits to allow for control of noxious weeds along State highway right of ways.
2. Coordinate with Trinity County Department of Agriculture on noxious weed control projects within the State highway right of way boundaries.
3. Educate the public and Department of Transportation employees about noxious weeds, their identification and methods of prevention.

C. Trinity County Department of Transportation

1. Use maintenance practices that will limit the spread of noxious weeds.
2. Educate road Department employees on noxious weeds, their identification and methods of prevention.
3. Control noxious weed infestations on county road right of ways.

D. Trinity County Resource Conservation District

1. Educate the public about noxious weeds and their impacts on native plant communities.
2. Promote methods to control noxious weeds that avoid negative impacts on natural communities.
3. Provide recommendations and planting specifications for the revegetation of disturbed areas.
4. Advocate for more sophisticated management strategies by agencies with weed management responsibilities.
5. Lead efforts to contain and/or eradicate Scotch Broom along the major transportation categories in the county.
6. Cooperate with the TC Department of Agriculture to map noxious weed infestations utilizing GIS.
7. Participate in efforts to identify and map noxious weed infestations throughout the county.
8. Assist landowners in Trinity County in effectively controlling noxious weeds on private property.

E. U.S. Forest Service, Shasta-Trinity National Forest and Six Rivers National Forest

1. Educate the public about noxious weeds; assist in their identification and methods of control.
2. Promote the control and treatment of noxious weeds on federal lands.
3. Support and assist other agencies and interested parties in noxious weed prevention and control.
4. Identify and map all noxious weed infestations on US Forest Service System Lands.
5. Control and/or manage high priority weed infestations.

F. Sierra Pacific Industries

1. Identification: Field Foresters will survey company lands for targeted noxious weeds.
2. Notification: The County Department of Agriculture will be notified of all category "A" rated noxious weeds. Adjacent landowners (private, state and federal) will be notified if noxious weeds are located adjacent to or on their properties.

3. Control: Where possible, a program to contain, control, and eliminate noxious weeds will be implemented. Use an integrated approach to controlling weeds, including chemical, biological, and manual methods, and preventative measures.
4. Monitoring: Treatments will be monitored for effectiveness.
5. Participation in cooperative efforts to control noxious weeds will be encouraged.
6. Use certified weed-free straw, where possible, on all sites requiring erosion-control measures.

G. California Department of Fish and Game

1. Provide technical support, especially when weed control relates to the management of native wildlife and plants.
2. Practice responsible control of noxious weed infestations on lands managed by California Department of Fish and Game.
3. Permit research on the control of noxious weeds on California Department of Fish and Game lands when proposed research methods are compatible with the management objectives of the subject property.

H. Bureau of Land Management

1. Educate the public about noxious weeds, their identification and methods of control.
2. Identify and map noxious weed infestations on public lands.
3. Promote the prevention and control of noxious weeds on federal lands.
4. Support and assist other agencies and interested parties in noxious weed prevention and control.

I. Trinity County Resource Conservation and Development Council

1. Provide coordination and information on regional issues related to noxious weed control.
2. Support the Trinity Noxious Weed Group's efforts in control and prevention of noxious weeds.

J. Safe Alternatives for our Forest Environment

1. Support TCWMC efforts in control and prevention of noxious weeds.
2. Provide information about weeds to the public through their newsletter and other networks.

K. Trinity Riders Association

1. Support TCWMC efforts in control and prevention of noxious weeds.
2. Provide information about weeds to equestrians through meetings and other networks.